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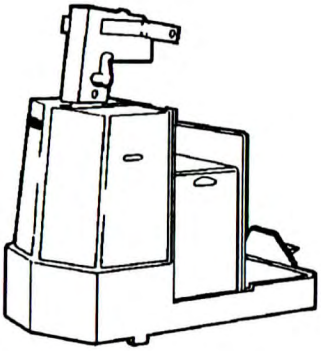
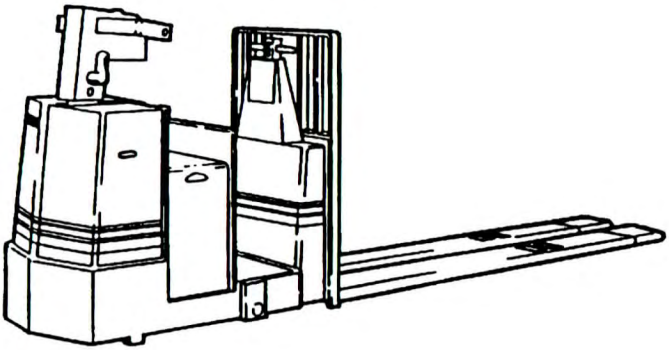
Operator's Manual

Do not remove this manual from the truck





PWT/PWC

CLARK

Book No. 2813072
OM-614

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Record the following information pertaining to your truck.

Model No. _____
Serial No. _____
Customer Truck Identification No. _____
Truck Weight, Empty _____
Truck Rated Capacity _____
Truck Gross Weight _____
Truck Gross Weight, Loaded w/ Rated Load _____
Special Equipment or Attachments _____

IMPORTANT
Do not expose this manual to hot water or steam.

The following warnings are provided pursuant to California Health & Safety Code Sections 25249.5 et. seq:

⚠ WARNING

California Proposition 65
This product contains and emits chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

1995 Clark Material Handling Company

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Operator's Manual

You must be trained and authorized to operate a lift truck.

YOU can prevent accidents

First: Learn safe operating rules and your company rules.

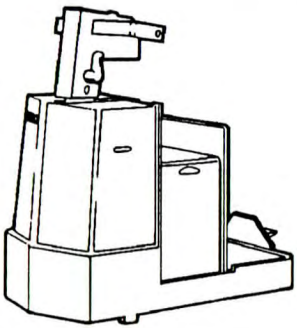
Next: Read your Operator's Manual. If you do not understand it, ask your supervisor for help.

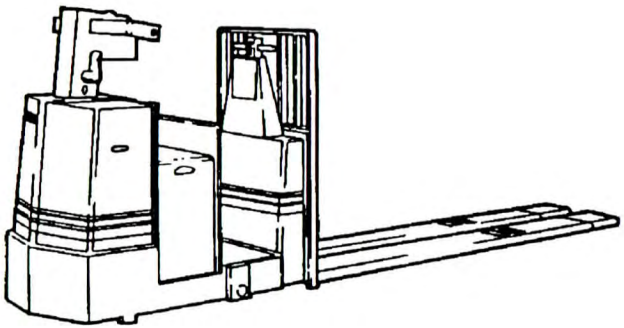
Learn about the unit you operate.

KNOW YOUR TRUCK

Then: Practice operating your truck safely.

And: Keep your truck in safe operating condition with correct and timely maintenance.





Breaking these rules will cause serious or fatal injury to yourself and others

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A Message to CLARK Lift Truck Operators

Clark trucks are specialized machines with unique operating characteristics, designed to perform a specific job. Their function and operation is not like a car or ordinary truck. They require specific instructions and rules for safe operation and maintenance.

Safe operation of Clark trucks is of primary importance to CLARK. Our experience with Clark truck accidents has shown that when accidents happen and people are killed or injured, the causes are:

- **Operator not properly trained**
- **Operator not experienced with lift truck operation**
- **Basic safety rules not followed**
- **Lift truck not maintained in safe operating condition**

For these reasons, CLARK wants you to know about the safe operation and correct maintenance of your lift truck.

This manual is designed to help you operate your lift truck safely. This manual shows and tells you about safety inspections and the important general safety rules and hazards of Clark truck operation. It describes the special components and features of the truck and explains their functions. The correct operating procedures are shown and explained. Illustrations and important safety messages are included for clear understanding. A Section on maintenance and lubrication is included for the lift truck mechanic.

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The operator's manual is not a training manual. It is a guide to help trained and authorized operators safely operate their Clark truck by emphasizing and illustrating the correct procedures. However, it cannot cover every possible situation that may result in an accident. You must watch for hazards in your work areas and avoid or correct them. It is important that you know and understand the information in this manual and that you know and follow your company safety rules! Be sure that your equipment is maintained in a safe condition. Do not operate a damaged or malfunctioning truck. Practice safe operation every time you use your lift truck. Let's join together to set high standards in safety.

Remember, before you start operating this lift truck, be sure you understand all driving procedures. It is your responsibility, and it is important to you and your family, to operate your lift truck safely and efficiently. Be aware that the Federal Occupational Safety and Health Act (OSHA) and state laws require that operators be completely trained in the safe operation of lift trucks; it is also an (OSHA) requirement that a machine inspection be performed before every shift. If you think you need training in operating or inspecting your lift truck, ask your supervisor.

CLARK trucks are built to take hard work, but not abuse. They are built to be dependable, but they are only as safe and efficient as the operator and the persons responsible for maintaining them. Do not make any repairs to this truck unless you have been trained in safe lift truck repair procedures and are authorized by your employer.

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Introduction

CLARK welcomes you to the growing group of professionals who own, operate, and maintain CLARK lift trucks. We take pride in the long tradition of quality products and superior value the CLARK name represents. This manual familiarizes you with safety, operating, and maintenance information about your new lift truck. It has been specially prepared to help you use and maintain your CLARK truck in a safe and correct manner.

Your CLARK truck has been designed and built to be as safe and efficient as today's technology can make it. As manufactured, it meets all the applicable mandatory requirements of ANSI B56.1-1988 Safety Standard for Powered Industrial Trucks. Each truck is also furnished with equipment to help you operate safely; for example, load back rest, parking brake and horn are standard equipment.

Safe, productive operation of a Clark truck requires both skill and knowledge on the part of the operator. The operator must know, understand, and practice the safety rules and safe driving and load handling techniques described in this manual. To develop the skill required, the operator must become familiar with the construction and features of the order truck and how they function. The operator must understand its capabilities and limitations, and see that it is kept in a safe condition.

Routine Servicing and Maintenance

Regular maintenance and care of your Clark truck is not only important for economy and utilization reasons; it is essential for your safety. A faulty truck is a potential source of danger to the operator, and to other personnel working near it. As with all quality equipment, keep your truck in good operating condition by following the recommended schedule of maintenance.

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Operator Daily Inspection — Safety and Operating Checks

A truck should always be examined by the operator, before driving, to be sure it is safe to operate. The importance of this procedure is emphasized in this manual with a brief illustrated review and later with more detailed instructions. CLARK dealers can supply copies of a helpful "Drivers Daily Checklist."

Planned Maintenance

In addition to the daily operator inspection, CLARK recommends that a planned maintenance and safety inspection program (PM) be performed by a trained and authorized mechanic on a regular basis. The PM will provide an opportunity to make a thorough inspection of the safety and operating condition of your lift truck. Necessary adjustments and repairs can be done during the PM, which will increase the life of components and reduce unscheduled downtime and increase safety. The PM can be scheduled to meet your particular application and lift truck usage.

The procedures for a periodic planned maintenance program that covers inspections, operational checks, cleaning, lubrication, and minor adjustments are outlined in this manual. Your CLARK dealer is prepared to help you with a Planned Maintenance Program by trained service personnel who know your lift truck and can keep it operating safely and efficiently.

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How to Use this Manual

This manual is a digest of essential information about the safe operation, the features and functions and explains how to maintain your lift truck. This manual is organized into eight major parts:

Section 1, General Safety Rules, reviews and illustrates accepted practices for safe operation of a lift truck.

Section 2, Operating Hazards, warns of conditions that could cause damage to the truck or injury to the operator or other personnel.

Section 3, Know Your Truck, describes the major operating components, systems, controls, and other features of your truck and tells how they function.

Section 4, Operator Maintenance and Care, presents details on how to perform the operator's daily safety inspection and refuel the lift truck.

Section 5, Starting and Operating Procedures, discusses specific instructions on the safe, efficient operation of your lift truck.

Section 6, Emergency Towing, gives instructions for towing your truck in an emergency.

Section 7, Planned Maintenance, describes the PM program.

Section 8, Specifications, provides reference information and data on features, components, and maintenance items.

Also, the **Index** helps you locate information about various topics.

NOTICE: The descriptions and specifications included in this manual were in effect at the time of printing. CLARK Material Handling Company reserves the right to make improvements and changes in specifications or design, without notice and without incurring obligation. Please check with your authorized CLARK dealer for information on possible updates or revisions.

The examples, illustrations, and explanations in this manual should help you improve your skill and knowledge as a professional lift truck operator and take full advantage of the capabilities and safety features of your new lift truck.

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The first Section of the manual is devoted to a review, with illustrations and brief messages, of general safety rules and the major operating hazards you can encounter while operating a lift truck. Next, you will find descriptions of the components of your specific lift truck model and how the instruments, gauges, and controls operate. Then, you will find a discussion of safe and efficient operating procedures, followed by instructions on how to tow a disabled lift truck. The later sections of the manual are devoted to maintenance and truck specifications.

Take time to carefully read the "Know Your Truck" section. By acquiring a good basic understanding of your truck's features, and how they function, you are better prepared to operate it both efficiently and safely.

In "Planned Maintenance," you will find essential information for correct servicing and periodic maintenance of your truck, including charts with recommended maintenance intervals and component capacities. Carefully follow these instructions and procedures.

Each major Section has its own table of contents, so that you can find the various topics more easily. If you cannot find a topic in the table of contents, check the index at the back of the manual.

We urge you to first carefully read the manual from cover to cover. Take time to read and understand the information on general safety rules and operating hazards. Acquaint yourself with the various procedures in this manual. Understand how all gauges, indicator lights, and controls function. Please contact your authorized CLARK dealer for the answers to any questions you may have about your lift truck's features, operation, or manuals.

Operate your lift truck safely; careful driving is your responsibility. Drive defensively and think about the safety of people who are working nearby. Know your truck's capabilities and limitations. Follow all instructions in this manual, including all IMPORTANT, CAUTION, WARNING, and DANGER messages to avoid damage to your lift truck or the possibility of any harm to yourself or others.

This manual is intended to be a permanently attached part of your lift truck. Keep it on the truck as a ready reference for anyone who may drive or service it. If the truck you operate is not equipped with a manual, ask your supervisor to obtain one and have it attached to the truck. And, remember, your CLARK dealer is pleased to answer any questions about the operation and maintenance of your lift truck and will provide you with additional information should you require it.

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Safety Signs and Safety Messages

Improper operation can cause accidents. Don't take chances with incorrect or damaged equipment. **Read** and **understand** the procedures for safe driving and maintenance outlined in this manual. Don't hesitate to ask for help. **Stay alert!** Follow safety rules, regulations, and procedures. Avoid accidents by recognizing dangerous procedures or situations before they occur. **Drive and work safely** and follow the safety signs and their messages on the truck and in this manual.

Safety signs and messages are placed in this manual and on the truck to provide instructions and identify specific areas where potential hazards exist and special precautions should be taken. Know and understand the meaning of these instructions, signs, and messages. Damage to the truck, death, or serious injury to you or other persons may result if these messages are not followed. If warning decals are damaged, they must be replaced. Contact your CLARK dealer for replacements.

NOTICE

This message is used when special information, instructions or identification are required relating to procedures, equipment, tools, pressures, capacities and other special data.

IMPORTANT

This message is used when special precautions should be taken to ensure a correct action or to avoid damage to or malfunction of the truck or a component.

CAUTION

This message is a reminder of safety practices that can result in personal injury if proper precautions are not taken.

WARNING

This message indicates a hazard exists that can result in injury or death if proper precautions are not taken.

DANGER

This message is used when an extreme hazard exists.

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General Practices

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Operating Practices 1-4
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Mounting and Dismounting Tips 1-5
Load Handling Practices 1-8
Pinch Points 1-10
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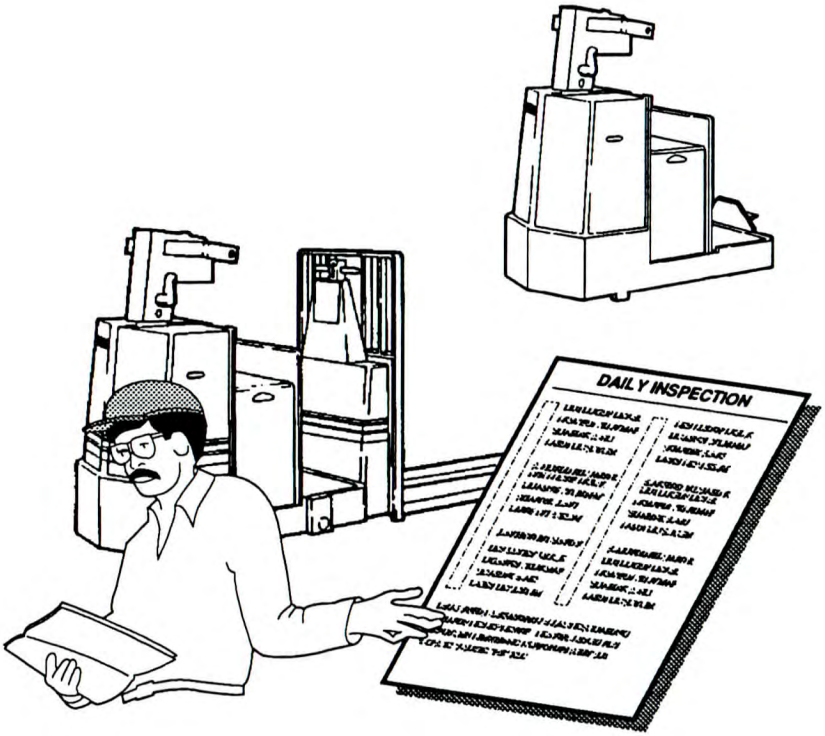
Daily Inspection

At the beginning of each shift, inspect your truck and fill out a daily inspection sheet.

Check for damage and maintenance problems.

Have repairs made before you operate the truck.



Do not make repairs yourself. Lift truck mechanics are trained professionals. They know how to make repairs safely.

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Do's and Don'ts

DON'T MIX DRUGS OR ALCOHOL WITH YOUR JOB.

DO WATCH FOR PEDESTRIANS

DON'T BLOCK SAFETY OR EMERGENCY EQUIPMENT

DO WEAR SAFETY EQUIPMENT WHEN REQUIRED

DON'T SMOKE IN "NO SMOKING" AREAS

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WARNING

Your safety and the safety of those around you depends upon you, the operator, using care and careful judgement in the operation of this or any other material handling equipment. Know and understand the positions and functions of all controls before attempting to operate any material handling equipment.

Read this manual completely and make sure you understand all the controls and their functions. Make sure you understand the characteristics of speed, stability, brakes, speed limit switch and steering of this unit. If you have any questions contact your Local Authorized Clark Dealer.

The operating instructions in this guide do not replace any other rules or laws of safety that are used in or required by federal, state, local agencies or your own operational area. The operating rules listed do not follow any order of importance but are all to be learned and used in your daily operation. Make sure that your truck is correctly equipped for use in your work area according to these rules or laws.

WARNING

Always check all controls and functions in a safe area before starting to work. Always wear the safety lanyard (tether) and belt.

Operating Rules and Instructions

Operator Qualifications Trained and authorized operators only shall be permitted to operate any powered material handling trucks. Operators of powered industrial trucks shall be qualified as to their visual, auditory, physical and mental ability to operate the equipment.

Operator Training An operator's training program should center around the end user's company policies, operating conditions and trucks, as well as, any federal, state or local rules and laws. The program should be presented completely to all. Any new operators should be presented with this training program whether or not they have claimed previous experience. If your company has questions as to the program content please refer to ASME B56.1 Section 4.19.4.

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Operator Responsibility

Powered material handling truck operators shall abide by the following rules and practices, which are clearly the operators responsibility and are not in any order of importance:

1. **Do Not** wear loose clothing, particularly cuffs and scarves or jewelry.
2. **Do Not** rush.
3. **Do Not** operate this unit with wet or greasy hands.
4. **No Riders**-passengers shall not be permitted to ride.
5. **Do Not** place any part of body outside running lines of any material handling truck.
6. **At all times** safeguard the pedestrians. **Do Not** drive a truck up to anyone standing in front of any fixed object.
7. Know any hand signals used on this job and who has responsibility for signaling.
8. Anytime an operator is dismounted from truck, the forks and platform, whether loaded or empty, must be fully lowered. All controls should be in their neutral position and ensure brake has set to prevent movement. The key switch should be in the off position and the key removed so no unauthorized personnel can operate this truck.
9. Know what, if any, safety equipment is required to operate this truck and use it. Hard hat, safety glasses, reflector-type vest, respirators and ear plugs may be some of the types of equipment required.

Mounting and Dismounting Tips

A. **Do Not** run.

B. The operator's compartment or platform should be maintained, free of debris at all times. The anti-skid material should be replaced before the material becomes smooth or worn away.

C. **Never** leave the truck unattended with the key on.

D. **Always** fully lower or secure all equipment before dismounting.

E. **Always** ensure brake has set and park in a clear, authorized area before leaving truck.

F. **Do Not** jump off truck while moving or stationary.

When a powered material handling industrial truck is to be left unattended:

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A. Stop truck in a clear authorized area.
B. Place directional controls in neutral position.
C. Ensure brake has set.
D. Turn key switch to **"OFF"**, **remove** key and **disconnect** battery connectors.
E. **Never** park the truck on any incline, if it is necessary you must block the wheels.

When powered material handling industrial trucks are traveling:

1. **Obey and observe** all regulations concerning traffic and plant speed limits. Maintain a safe distance from pedestrians and equipment ahead, based on speed of travel.
2. Allow plenty of room for trailer that is being towed when making turns.
3. **Yield the right of way** to pedestrians and emergency equipment.
4. **Do Not** indulge in stunt driving or horseplay.
5. **Do Not** pass another truck traveling in the same direction at intersections, blind spots or other locations.
6. **Slow down** and sound the horn or other audible warning devices as you approach any cross aisles and other locations where vision is obstructed.
7. **Keep** a clear view of the path of travel and observe for traffic personnel and safe clearances.
8. **Grades, ramps or inclines:** This unit has been designed for smooth hard (level) floor operation. If it becomes necessary to operate on a grade, ramp or incline refer to ASME B56.1 for requirements. Also contact your Local Authorized Clark Dealer for additional information.
9. Travel speeds should be determined by plant conditions that will allow the truck to be brought to a complete stop in a safe manner.
10. **Starts, stops, turns or direction reversals** should be done in a smooth safe manner so as not to shift any of the load and/or overturn truck.
11. **Slow down** for any slippery and/or wet floors.
12. **Always** maintain a safe distance from the edge of docks and platforms when operating powered material handling industrial trucks.

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CAUTION

Never use powered material handling trucks while on any elevated dock or platform to move freight cars.

13. **Know** your work area, especially but not limited to overhead objects such as lights, sprinkler, piping or ceiling mounted heating/A.C. units.

DANGER

No other personnel should be elevated. No Riders.

14. **Before** driving over any bridgeplate, make sure that it has been properly secured. Drive carefully and slowly across the bridgeplate. Check its rated capacity and do not exceed it.
15. **Avoid** running into or over bumps, holes and loose material on the operating surface.
16. **While** negotiating turns, reduce speed, steer in a smooth motion. Leave adequate clearance for forks ot towed trailers.
17. **Report** any and all defects in unit noted during operation.
18. **Observe** instruments and gauges frequently to determine if they are operating properly.
19. **Do Not** permit riders on unit at any time.
20. **Carry** your load low so you have maximum stability while still maintaining ground clearance.
21. **Know** and understand the traffic flow patterns of your job.
22. **Know** and understand unit limitations and keep unit under control.

    NOTE: Rated capacity is on unit's data plate.
23. **Do Not** try to do too much too fast.

Load Handling Practices

1. Only move and/or transport materials that are properly stacked, stable and secure on the pallet. Whenever handling off-center loads which are unable to be centered, operate with **extreme** caution.
2. Handle only loads within the **rated capacity** of the unit, as stamped on data plate.

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WARNING

Stability and maneuverability will be adversely affected if loads exceed the dimensions used to establish truck capacity.

4. When attachments are used, extra care should be taken in securing, manipulating, positioning and transporting the load. Operate trucks with attachments as partially loaded trucks when not handling a load.
5. Only lift load vertically, **never** push or drag horizontally.
6. Always travel with load as low as possible while still maintaining clearance, while entering or leaving pallet.

Operator Care of this Unit

The operator should check all of the following before and during operation:

1. Tires and wheels
2. Warning devices, horn, back-up alarm, speed reduction switch
3. Lights
4. Battery, battery connector conditions and battery retainer gates
5. Controllers, directional travel control and emergency disconnect
6. Lift systems and limit switches
7. Braking and plugging
8. Steering mechanism

WARNING

If the unit is found to be in need of any repair, unsafe or contributes to an unsafe condition, the matter must be reported immediately to the designated authority. The unit must not be operated until it has been properly repaired to operating condition by an authorized serviceman.

WARNING

Injury or death could result if any limit switches are tampered with or bypassed. These switches were installed for your safety and the safety of others, injury or death could result.

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9. **Do Not** make any repairs or adjustments unless specifically authorized to do so. Use only O.E.M. parts to repair unit.
10. **Always** wear safety eye protection when checking electrolyte level battery.
11. **Do Not** use open flames when checking electrolyte level in battery.
12. **Do Not** adjust unit while any parts are in motion.
13. **Always** use extreme caution in removing drain plugs, grease fittings or pressure caps.
14. **Do Not** smoke while working around truck.
15. Have a trained and authorized mechanic make a necessary repairs. **Do Not** attempt any repairs you do not understand.

The professional operator should also become familiar with information for the American National Safety Standard for Powered Industrial Trucks ASME B56.1 Section "For the User". This book can be requested from:

ASME
22 Law Drive
P.O. Box 2300
Fairfield, NJ 07007-2300

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Know Your Truck

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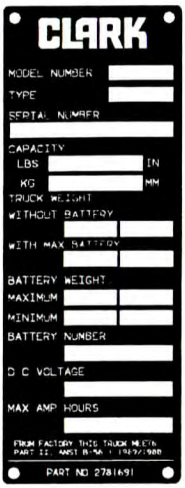
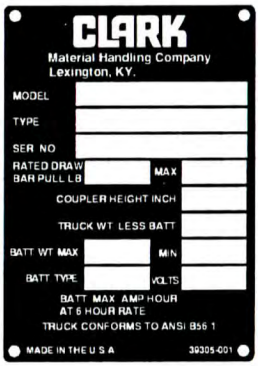
Truck Data and Capacity Plate



PWC Model



PWT Model

IMPORTANT

Know and understand the meaning of the data on your truck's nameplate.

1. Truck registered name.
2. Type designation. These code letters signify the type of construction with safeguards against fire, explosion, or electrical shock hazards for operation in nonclassified and classified areas. Check with the proper authority before entering areas where flammable or explosive material may be present.
3. Truck serial number and model number. Use these numbers when requesting information or ordering parts from an authorized CLARK dealer. The serial number is also stamped on the frame.
4. Attachment description (if any installed). The user must see that the truck is marked to identify the attachment(s), including the weight of the truck/attachment combination and truck capacity with the attachment.

IMPORTANT

When attachments are added or if the truck is modified, the capacity of the truck may be affected. Contact your authorized CLARK dealer for new nameplate showing the revised capacity.

5. Capacity rating, load center, and lifting height data. This shows the maximum load capacity of this truck with relation to load centers and fork heights. (See diagram on plate.) Personal injury and damage to the truck can occur if these capacities are exceeded. DO NOT EXCEED MAXIMUM SPECIFIED.
6. Truck weight, less load.
7. Battery weight.
8. Battery ampere-hour rating.
9. System voltage.

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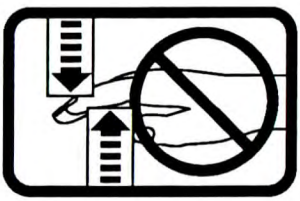
Safety Warning Decal

The operator's warning decal contains basic instructions for safe operation of a lift truck. Read and understand these instructions and other safety messages in this manual and on the lift truck.

PWC Model

PWT Model

The pinch point decal is located on the battery plate. This decal instructs the operator to keep fingers away.



WARNING

Do not reach into the area by the lift cylinder or by the battery compartment. Personal injury may result if any part of your body is between moving parts of the unit.

The steerhead decal is located on the left hand side of the steerhead. This decal instructs the operator **not** to tilt the steerhead while the vehicle is moving.

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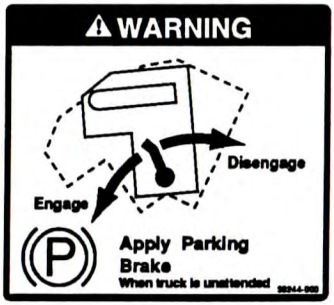
The parking brake decal is located on the right hand side of the steerhead. This decal instructs the operator always apply the parking brake when the truck is unattended.



IMPORTANT

Replace any decal that is damaged, missing or cannot be read. If a decal is on a part that is replaced, make sure you install a new decal on the new part. See your Local Authorized Clark Dealer for new decals.

Do Not operate this unit unless all factory installed guards and shields are properly secured in place.

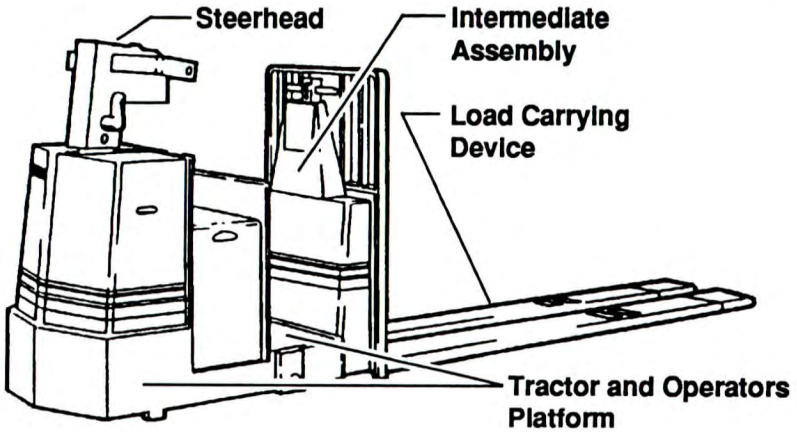
IMPORTANT

Read and observe all warnings on this unit before operating it.

OPERATING CONTROLS & FUNCTIONS

Center Control Pallet Truck (PWC)

The PWC or Center Controlled Pallet Truck, as shown below has been designed to be operated in both the walking mode or the riding mode.



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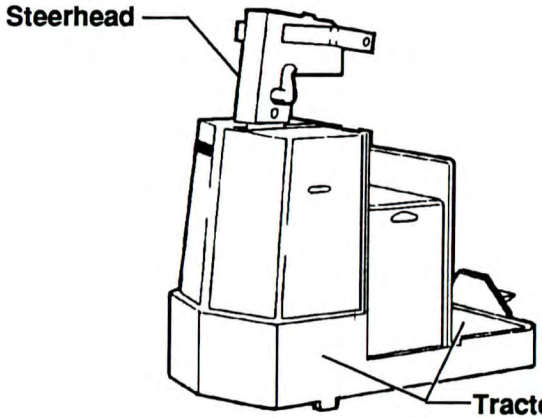
Walkie/Rider Tow Tractor (PWT)

The PWT, or Walkie/Rider Tow Tractor, as shown below has been designed to be operated in both the walking mode or the riding mode.



Before we explain the control of these units, lets point out the various features:

Steerhead: This assembly controls the steering and speed of the PWC and PWT units. The standard units has tilt type steerhead with an optional fixed head available.

Tractor with Operator's Platform: The tractor is the power portion which also has the battery compartment and operator's platform. This platform provides a stable area from which to operate this unit. **Only** the operator should be on the platform while operating the units. **No** other riders should be allowed on the platform.

Intermediate Assembly: ***(PWC Only)*** Primarily used for a hand hold for the operator to grasp while in reverse direction, it also serves as another control area. This assembly has control buttons for reverse, lift and lower and houses the hydraulic pump in the lower section of the intermediate assembly.

Load Carrying Device: ***(PWC Only)*** Used to carry rated loads not people. Should always be lowered when unit is parked and unattended. Should also be fully raised when traveling except when leaving or entering pallets.

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Steerhead Controls and Functions

This is the standard tilt steerhead. The travel controls of these units are contained here. Because these units are designed to be operated with the operator on board or walking along side, you will note that the steerhead contains mirror image directional controls on both left and right sides. The optional fixed steerhead has the same mirror image directional controls.

Horn Button Switch: The horn is activated by pushing down on the horn button located on top of the steering control handle.

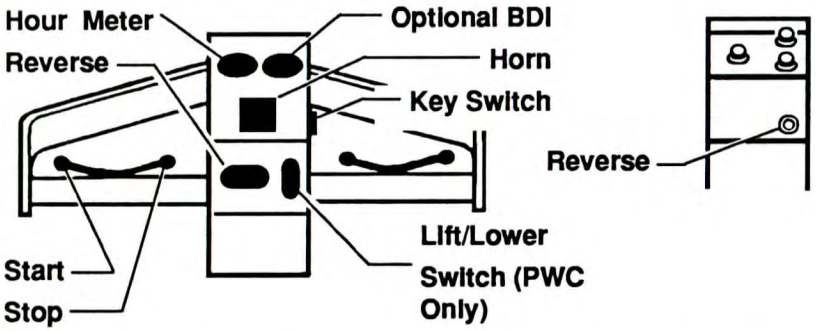
Start and Stop Lever: These levers are marked "START" and "STOP". They control the speed, direction of travel and braking of the units. To accelerate forward, depress the start lever. The speed is dependent on how far you depress either one of the levers. To travel in reverse, hold the grip in one hand and depress the reverse button (located at the top of the steerhead or in the front of the optional fixed steerhead) with the other hand. *(PWC Only)* To travel in reverse, depress the reverse button located at the top of the steerhead or in the intermediate assembly and reapply the start lever on either side of the steerhead. Release either button and unit **will** travel forward again.

IMPORTANT

The PWT tow tractor has only one fixed speed in reverse, there is not adjustment to this speed.

CAUTION

When operating the in reverse, please make sure you are in complete control of the steerhead.



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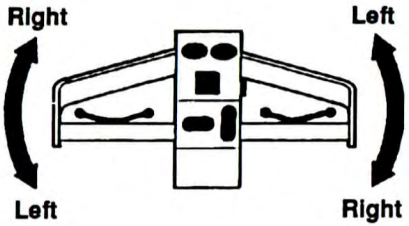
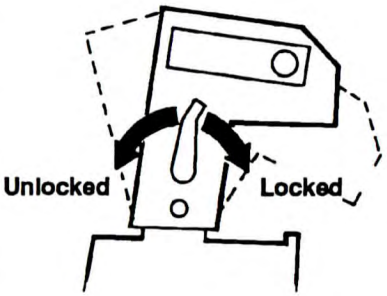
Lift Switch: ***(PWC Only)*** The lift (raising load carrying device) is controlled by pushing down on the lift button. This device will continue to raise as long as the button is depressed or until the load carry device activates the lift limit switch. Releasing the button will automatically stop the lift.

Lower Switch: ***(PWC Only)*** The lower (lowering load device) is controlled by pushing down on the lower button. This device will continue to lower as long as the button is depressed or until the lowering stops are reached. Releasing the button will automatically stop the lowering.

Steering: The steerhead is connected to the transmission by a steer arm. By turning the steerhead to the right the unit will turn to the right and by turning left the unit will turn to the left.



Tilt Steerhead: The tilt steerhead is for the operator's comfort. To operate this feature, locate the lever on the left side of the steerhead (as shown), stand on the operator's platform and push the lever5 awat from you. now adjust the steerhead to the position you desire. Pull the lever back towards you to lock the steerhead into position.



⚠ WARNING

Do not attempt to adjust the steerhead while operating the truck, you may loose control of the truck.

IMPORTANT

Always tilt steerhead completely forward to lift the battery from the unit.

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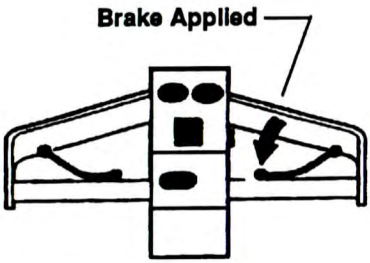
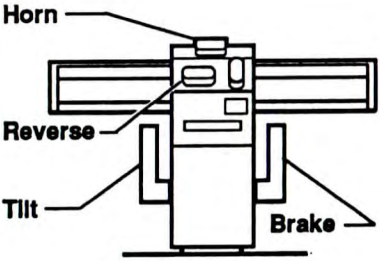
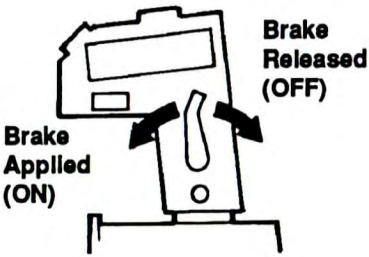
Braking and Brake Positions: These units were designed for picking type operation which allows the operator to walk along side of the truck while picking product. The unit will not stop unless the operator manually applies the brakes. This then will allow the truck to coast along side the operator for ease of work while loading pallets on carts or trailers.

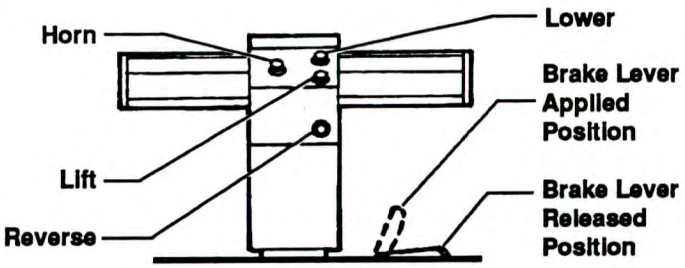


The parking brake is located on the right side of the steerhead. To apply the parking brake, pull the lever toward you. To release, push the lever away from you. Always apply the parking brake and turn off the key switch before leaving the tractor. The parking brake should always be on before you plug in the battery and turn on the key switch.



The parking brake on fixed steerhead units is located on the fire wall just to the right of the steerhead. Lifting the lever will aply the parking brake.





Parking Brake (Fixed Steerhead)

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Plugging - Optional: Plugging option is only available with PMC Motor Corporation. **Do not** attempt to use plugging on a Resistor (contactor type) Motor Control System.

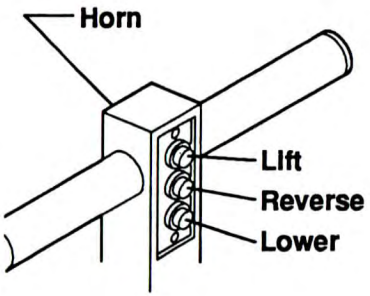
IMPORTANT

In vehicles equipped with Resistor (contactor type) Control System, always come to a complete stop before reversing directions.

Plugging is a normal operation to slow down and/or stop an industrial truck. To plug a unit while traveling forward simply depress the reverse button while continuing to hold the start/stop lever. The unit, should come to a smooth stop in about its own length. If you should continue to hold the reverse button in, the unit will start to accelerate in the reverse direction.

Plugging while traveling in the reverse direction is simply done by releasing the reverse button and continuing to hold the start/stop lever down. As before the unit should come to a smooth controlled stop or the unit will start to accelerate in the forward direction if the start/stop lever is continued to be depressed.

Intermediate Assembly: ***(PWC Only)***
The intermediate handle serves two primary purposes. The first and most essential, is for a hand hold when the operator is driving the vehicle in reverse or mounting the unit. The second is to provide some of the functions contained in the steerhead. Therefore the operator can maintain two points of hand contact with the machine while riding and constant eye contact with his path while sounding the horn, when required.



There are four push button controls contained in the high speed handle. The first is the **lift button** which raises the load carrying device. The second button is the **lowering button**; depressing this button will cause the load carrying device to lower. The third is the **reverse button;** depressing this button in conjunction with applying the accelerator control lever will allow the unit to travel in reverse. The fourth and last button is the **horn button** located on the back side.

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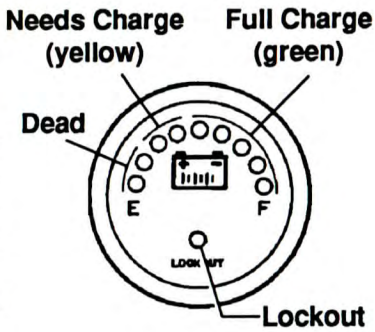
WARNING

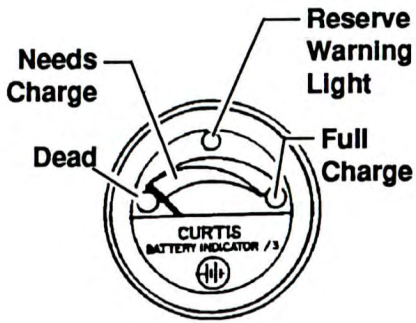
PWC truck are set to approximately 3.5 MPH empty by government and industry regulations in walking mode. Do not make any adjustments to this factory setting.

Every truck unit has a hour meter for ease in determining planned maintenance schedules. The hour meter is standard on all manufactured trucks and is located on the top of the units tilt steerhead and on the side of the fixed steerhead.

Optional Equipment The Battery Discharge Indicator (BDI) option has a green, yellow and red light which indicates the battery's state of charge.

On trucks with Battery Discharge Indicator (BDI) with lockout will be used to interrupt full speed operation. This interruption takes place when the indicator is in the red area. The system will automatically reset when a charged battery is installed.





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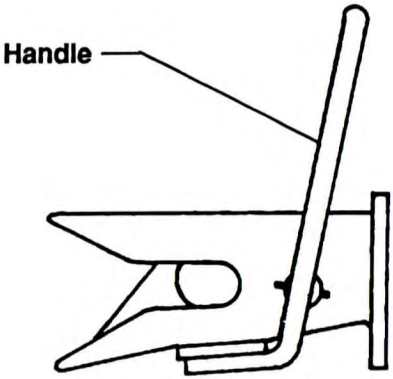
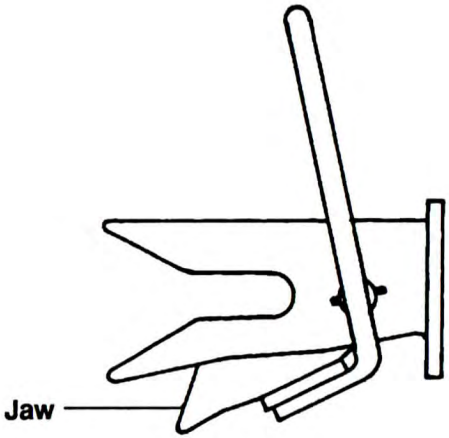
Standard Coupler All PWT Walkie/Rider trucks come with a standard type jaw coupler or optional towing eye for towing carts or trailers.



Closed



Open

The jaw coupler is spring loaded to keep the jaws clamped together. A handle is mounted on the coupler to open the jaws to release the cart or trailer.

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Operation of this Unit Now that we have covered the operational controls of the unit, let's discuss the recommended operational procedure.

Since the Occupational Safety and Health Act (OSHA) requires that "only trained and authorized operators shall be permitted to operate a powered industrial truck", it is the user's responsibility to comply. The following is intended as a guide in training operators in safe truck operation, it is not a training manual nor is it intended to preclude good judgement and common sense.

For a complete listing of what should be covered in a training program obtain a copy of ASME B56.9 Safety Standard for Industrial Tow Trucks.

Write to: ASME
22 Law Drive
P.O. Box 2300
Fairfield, NJ 07007-2300

Before Operation Inspection Completely check the unit at the beginning of each shift or work period. Ensure that all the following checks have been made before operating the unit:

1. Check the condition of tires and wheels.
2. Check that the brakes are working properly.
3. Check for worn or cracked frame.
4. Check the tall the guards, horn, limit switch, warnings, safety devices, etc. are functional.
5. Check that the battery retainment is in place.
6. Check for oil leaks.
7. Check battery level.
8. Check for full motion, proper function of all controls and plugging (if available).
9. Check for full motion of steering without slack or tight spots.
10. Inspect the battery connectors. Check the condition of electrical cables and wiring and make a report of all worn or cracked cables.

Check the Maintenance Manual for more specific information.

IMPORTANT

Do not operate truck if it is in need of repair. If it is in need of repair, tag the unit. Remove the key and report the condition to the proper authority.

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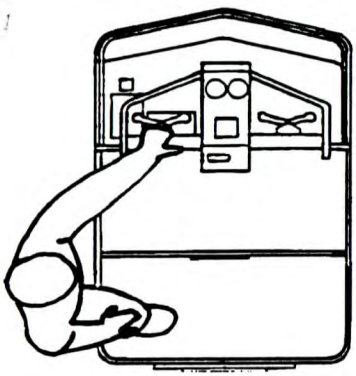
Before Operation Inspection

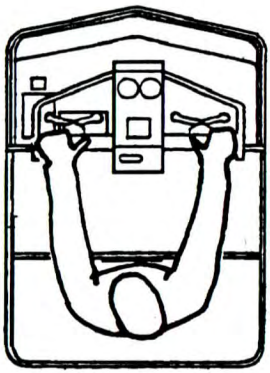
If the truck requires repair in any way while you are operating it, stop operating the unit and report the matter immediately to the proper authority.

Only specifically authorized and qualified personnel should make repairs and adjustments to the truck. Understand the units limitations and operate the truck in a safe manner so as not to cause injury to personnel.

⚠ WARNING

Do not indulge in stunt driving or horseplay.





Be certain that unit is the correct fire safety type for the area in which you are working. The proper type designation for the tow trucks is on the nameplate. In areas classified as hazardous, use only trucks approved for use in those areas. All hazardous areas should have classified markings.

If you are unsure of the classification of the area you wish to enter, ask your supervisor before entering.

1. Before plugging in the battery, make sure that the key switch is in the "off" position.
2. Parking brake is set.
3. Plug in the battery connector.
4. When mounting the unit as a rider, grasp the steerhead with one hand, *(PWC Only with the other hand grasp the intermediate handle)*, then step up onto the operator's platform and grasp the other steerhead handle.

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WARNING

Always be sure that your feet are within the confines of the platform and you are positioned for maximum stability.

5. Then turn the key switch to the "on" position.
6. Check hour meter operation.
7. Check the battery discharge indicator gauge (if installed) to see what condition of charge the battery is in. If the gauge shows low (red) the battery must be replaced before operating.
8. Check horn operation, if it does not work do not operate the truck.
9. Always travel with the load carrying device fully raised whether loaded or unloaded, except when entering or leaving a pallet.

CAUTION

Always sound your horn at blind corners and intersections, before proceeding to travel.

WARNING

Be sure that the area being used for test running is clear of spectators and obstructions. Operate unit with empty trailers or carts.

WARNING

Operation of full speed should only be attempted after complete familiarity with all operations. Always exercise caution and good judgement while running this equipment.

The most efficient unit operation is achieved while unit is being operated at half speed to full speed. Only attempt full speed after familiarizing yourself with steering and directional controls.

CAUTION

To prolong component life, avoid "jackrabbit" starts, stops and forceful steering control movements.

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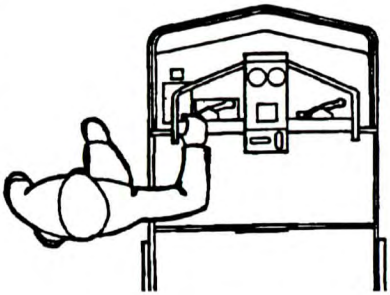
10. When operating the truck as a walkie with the cart or trailer trailing the vehicle, always walk to the side of the unit. Maximum speed is set at 3.5 m.p.h..

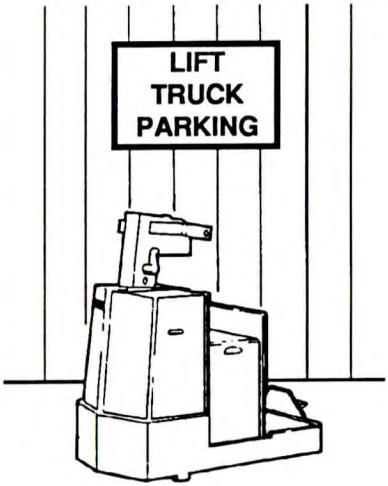


⚠ WARNING

Never attempt to operate the truck from the front of the unit.

⚠ WARNING

Do not operate this unit in reverse when coupled to trailers or carts. You may lose control of the trailer or cart.



Parking and Stopping Unit

1. Park unit in designated parking areas only. Make sure unit does not block fire aisles, fire equipment, stairways or walkways.
2. *PWC Only:* Lower load carrying device fully.
3. Insure that the start control handles are in the "neutral" position.
4. Manually set parking brake.
5. Make sure that all motion has stopped.
6. Turn key switch to "off" position, remove key and disconnect battery.
7. Remember to block the drive wheel securely to prevent accidental movement on uneven surfaces.

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Daily Safety Inspection

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NOTICE

The Occupational Safety and Health Act (OSHA) requires that truck users examine their trucks before each shift to be sure they are in safe working order. Defects when found shall be immediately reported and corrected. The truck shall be taken out of service until it has been restored to safe operating condition.

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Inspecting Your Truck

Before using the PWC or PWT, **it is the operator's responsibility** to check its condition and be sure it is safe to operate.

Check for damage and maintenance problems; have repairs made before you operate the truck. Unusual noises or problems should be reported immediately to your supervisor or other designated authority.

Do not make repairs yourself unless you have been trained in lift truck repair procedures and authorized by your employer. Have a qualified mechanic correct all discrepancies using genuine CLARK or CLARK-approved parts.

Do not operate a truck if it is in need of repair. If it is in an unsafe condition, remove the key and report the condition to the proper authority. If the truck becomes unsafe in any way while you are operating it, **stop** operating the truck, report the problem immediately, and have it corrected.

PWC or PWT's should be inspected every 8 hours, or at the start of each shift. In general, the daily inspection should include the **visual** and **functional checks** described on the following pages.

As an aid in carrying out this inspection, CLARK has prepared a form called the **"Driver's Daily Checklist."** We recommend that you use this form to make a daily record of your inspections and truck condition. You may obtain copies of this form from your CLARK dealer.

WARNING

Leaking hydraulic oil may be hot or under pressure.
When inspecting a lift truck:

- **Wear safety glasses**
- **Do not check for leaks with bare hands.**

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Visual Checks

First, perform a visual inspection of the truck and its major components:

1. Walk around your truck and take note of obvious damage that may have been caused by operation during the last shift.
2. Check that all capacity, safety, and warning plates or decals are attached and legible.
3. Check that the battery is installed and secured in position correctly. Check battery connector for safe condition.
4. Look for any external leakage around drive axle.
5. Check for hydraulic oil leaks and loose fittings. Do not use bare hands.
6. Be sure that the driver's overhead guard and any other safety devices are in place, undamaged, and attached securely.
7. Check all of the critical components that handle or carry the load.
8. Look the upright and lift chains over. Check for obvious wear and maintenance problems such as damaged or missing parts, leaks, slack or broken chains, bent parts, and so on.
9. Carefully inspect the load forks for cracks, breaks, bending, twists, and wear. Be sure that the forks are correctly installed and locked in their proper position.
10. Inspect the wheels and tires for safe mounting and wear condition.
11. Check the hydraulic sump oil level.

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Functional Checks

Check the operation of the truck as follows:

NOTICE

Before performing these checks, familiarize yourself with the operating procedures in Section 5.

1. Test warning devices, horn, lights, and other safety equipment and accessories.
2. Be sure all controls and systems operate freely and return to neutral properly. Check the:
   - Parking brake.
   - Hydraulic controls: lift, tilt, and aux functions.
   - Steering system.

When the functional checks are completed:

1. Bring truck to complete stop.
2. Apply the parking brake. (Brake will automatically apply when the pedal is in the raised position)
3. Lower the lift mechanism fully.
4. Turn the ignition switch to the OFF position.

If you are going to leave the truck unattended:

5. Remove the key.
6. Block the wheels, if the truck is parked on an incline or has the possibility of moving.
7. Unplug the battery.

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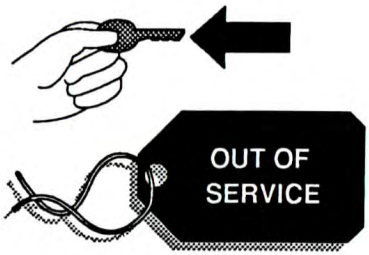
Concluding the Inspection

Make a record on the "Driver's Daily Checklist' of all the operating and truck problems that you find. Review the checklist to be sure it has been completed and turn it in to the person responsible for lift truck maintenance. Be sure any unusual noises or problems are investigated immediately.

Do not operate a truck that has a maintenance problem, or is not safe to operate.

Remove the key from the ignition switch and put an "Out of Service" tag on the truck.



Be sure to put this Operator's Manual back in the holder in the operator's compartment. Read the manual again if you are not sure of all lift truck operating procedures.

If all of the Daily Inspection checks were normal or satisfactory, the truck can be operated.

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Planned Maintenance

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Truck Maintenance

Regular maintenance and care of your truck is not only important for full and efficient truck life; it is essential for your safety. The importance of maintaining your truck in a safe operating condition by servicing it regularly and, when necessary, repairing it promptly cannot be emphasized too strongly. Experience has shown that powered industrial trucks can cause injury if improperly used or maintained. In the interest of promoting safety, several current industry and government safety standards specify that any powered industrial truck not in safe operating condition be removed from service and that all repairs be made by trained and authorized persons.

To assist you in keeping your truck in service and in good operating condition, this section outlines maintenance procedures that should be done at regular intervals. This planned approach is considered essential to the life and safe performance of your truck.

It is your responsibility to be alert for any indication that your truck may need service and have it attended to promptly. You play an important part in maintenance. Only you can make sure that your truck regularly receives the care it needs.

CAUTION

Powered industrial trucks may become hazardous if maintenance is neglected.

Planned Maintenance

As outlined previously, you should always make a safety inspection of your truck before operating it. The purpose of this daily examination is to check for any obvious damage and maintenance problems, and to have minor adjustments and repairs made to correct any unsafe condition.

In addition to the daily inspection, CLARK recommends that you set up and follow a periodic planned maintenance (PM) and inspection program. Performed on a regular basis, the program provides thorough inspections and checks on the safe operating condition of your truck. The need for major adjustments, repairs, or replacements is found and corrections made as required, not after failure has occurred. The specific schedule (frequency) for these PM inspections depends on the conditions of your particular application and truck usage.

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The recommended planned maintenance and lubrication schedule lists those items considered essential to the safety, life, and performance of your truck with typical recommended service intervals. Brief procedures for inspections, operational checks, cleaning, lubrication, and minor adjustments are included for your reference.

Your local CLARK dealer is prepared to help you with your Planned Maintenance Program, if you want assistance. Your CLARK dealer has specially trained service personnel who are authorized to check your truck according to the applicable safety regulations.

"Section 8, Specifications," contains some useful information for selected components, lubricants, critical bolt torques, refill capacities, and settings for your truck.

If you have the need for more information on the care and repair of your truck, see your CLARK dealer.

Planned Maintenance Intervals

Typical Operating Conditions

Time intervals between maintenances are largely determined by operating conditions. For example, operation in sandy, dusty locations requires shorter maintenance intervals than operation in clean warehouses. The indicated intervals are intended for **normal** operation. The following operating conditions are defined:

Normal Operation: Basically, eight-hour material handling, mostly in buildings or in clean, open air on clean paved surfaces.

Severe Operation: Prolonged operating hours or constant usage.

Extreme Operation:

- In sandy or dusty locations, such as: cement plants, lumber mills, and coal dust or stone crushing sites
- High-temperature locations, such as: steel mills, foundries, etc.
- Sudden temperature changes, such as: constant trips from buildings into the open air, refrigeration plants, etc..

If your fork lift truck is used in severe or extreme operating conditions, you must shorten the maintenance intervals accordingly.

NOTICE

Since the operating environment of lift trucks varies widely, the above descriptions are highly generalized and should be applied as actual conditions dictate.

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Battery Retainment/Care

WARNING

Do not service battery unless you have been trained and authorized.

WARNING

Always wear protective equipment (face shield, gloves, etc.) before servicing any battery. Battery acid will cause severe burns or injury.

All PWT/PWC units use a wet cell type storage battery.

WARNING

Do not allow the alkaline solution to fall in the Battery Cell This will result in a dead or weak cell.

WARNING

If acid contacts your skin, eyes, or clothing, flush the area immediately with large amounts of water and contact a physician.

WARNING

Do not attempt to recharge a frozen battery; this may cause it to rupture or explode. Do Not attempt to recharge the Battery in an area of sparks or near an open flame.

IMPORTANT

Use only batteries that meet the specifications listed on the nameplate.

Proper care and servicing of the battery is vital to assure satisfactory operation and life of your electric truck. Battery acid is, of course, extremely corrosive and should be washed off the unit if any spillage occurs. The battery should always be kept in a charged state. An overly discharged battery will cause a number of operational difficulties in any electric truck, and the battery charge should be checked first if any electrical difficulties occur.

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In cases of a battery not taking a charge, make sure that the charger is being attached to the battery connector and not to the connector on the unit. A battery which does not take a proper charge should be referred to the battery manufacturers's representative for service.

⚠ WARNING

Make sure that battery side gates are latched before operating unit.

Adding Water
On a routine basis after every 50 hours of operation, remove the Battery Vent Caps and inspect the Electrolyte level. The water in the Electrolyte Solution evaporates at high temperatures or with excessive charging rates. The level should be to the bottom of the Filler Neck; if not, replenish to the proper level with distilled water after charging.

Cleaning Terminals and Cable Connections
The top of the battery must be kept clean. Tighten the vent caps and clean the battery with a brush dipped in an alkaline solution (ammonia or baking soda and water). After the foaming has stopped, flush top of battery with clear water. If terminals and cable clamps are corroded, disconnect the cables and clean them with the same alkaline solution.

Maintenance Schedule

Repair or replace as necessary when inspection finds this part worn or damaged:

1. Drive or hydraulic motor brushes. Springs should be replaced along with brushes.
2. Brake shoe linings. Replace as an assembly.
3. Contact tips.
4. Steering cables. Should be replaced only, do not repair.
5. Load wheel.

Note: Always repack bearing whenever a wheel is changed. Remember the largest cause of wheel failure is material getting caught in wheel.

Note: Trucks operating in freezer, wet or brine conditions must be serviced twice in the standard maintenance period and special types of lubricants should be used.

Note: Current limit should be checked whenever 200 amp fuse has failed, any EV-1 or EV-100 SCR panel part has been replaced or drive motor has been repaired or replaced.

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Maintenance Schedule

Period	Time	Function
Daily		
-	-	Check water level in battery
-	-	Check oil level transmission.
-	-	Check all wheels and tires. Remove any and all tape, plastic and material.
-	-	Check operation of truck steering and speed change including all warning and safety devices (if equipped), horn, speed limit switch, lift limit switches, lights. Ensure that unit lifts and lowers properly.
-	-	(PWC) Check brake operation and stopping distance. (Approx. the length of the truck including forks, unloaded).
-	-	(PWT) Check brake operation and stopping distance. (Approx. twice the length of the truck, unloaded).
-	-	Check oil levels and insure unit has been greased.
-	-	(PWT) Check hydraulic tank with mast or forks fully lowered. Check for and correct any leaks.
Weekly 100Hours		
-	-	Check speed of truck and plugging distance. (PMC/SCR only).
-	-	Check brake linkage, adjust as necessary. Lubricate pivot points.
-	-	Check entire truck for loose items, power and control wiring, linkage, nuts and bolts.
-	-	Clean battery terminals of corrosion. Check electrolyte level. Inspect plug and battery cables.
-	-	Clean and inspect motor brushes. Use only low pressure air or vacuum.

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-	-	Check all hydraulic hoses and fittings for wear or leaks, repair as required.
-	-	Inspect contact tips.
-	-	Clean any and all dirt or corrosion from terminal area of PMC Controller units.

30 Days 200 Hours

-	-	Check steerhead bearing for wear.
*	*	Lubricate entire truck (see lubrication chart for type and points).
-	-	Check safety devices, horn, alarms (if equipped), lift limit switch, slow speed adjustment, loose chain switch for operation, lanyard (tether) and belt. Repair or adjust before truck goes back into operation.

60 Days 300 Hours

-	-	Check current limit on only EV-1 and EV-100 SCR trucks, adjust as needed.
-	-	Check entire truck frame and pivoting points for cracks or worn bearings, repair or replace as needed.
-	-	(PWC) Check hydraulic pressure setting.
-	-	Inspect brake shoe lining and brake drum.
-	-	Check drive tire and torque bolts to 200 ft. lbs.
-	-	Clean drive motor and inspect commutator. Use only low pressure air or vacuum.

Yearly 1000 Hours

-	-	Change transmission fluid (requires 3-3/4 pints refill).
*	*	(PWC) Change hydraulic oil and suction strainer.
-	-	Check amp draw reading for lift pump and drive motors.

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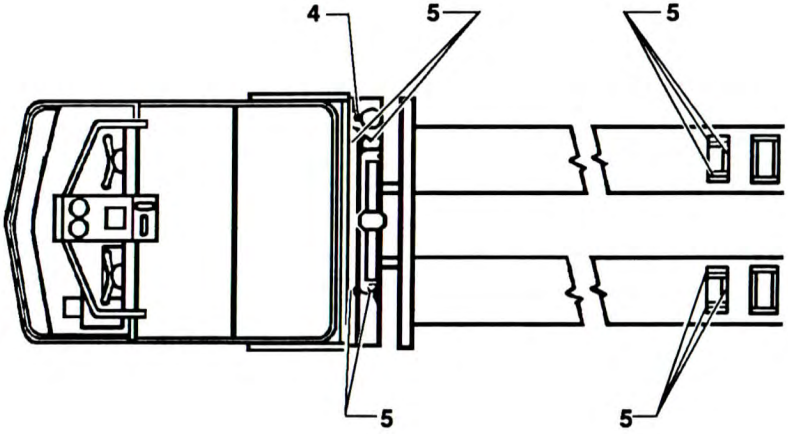
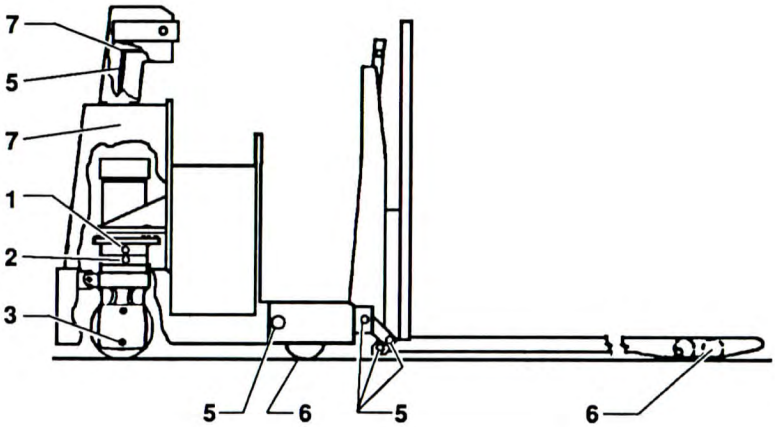
PWC Lubrication





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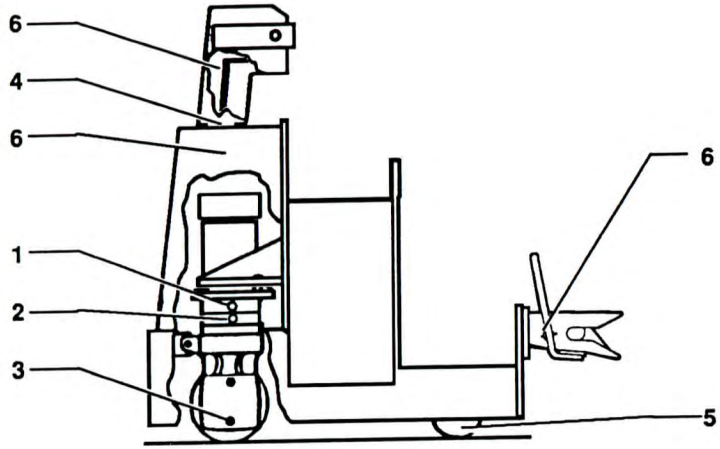
PWT Lubrication



PWC / PWT Lubrication

Item#	Description	Lube Points	Type of Lubricant	Interval
1	Transmission Plug and Vent	(1)	Mobilube 80/90 HD 3 3/4 Pints to Fill	Check daily Change yearly
2	Transmission Oil Level	(1)		Oil should not be below this level.
3	Transmission Drain	(1)		Change Yearly
4	(PWC) Hydraulic Reservoir		* Valvoline Super Hydro F-32U # Mobil FA-AERO	Check daily Change yearly
5	Pivot Points	(15)	* Mobilux 22 Grease # Mobil Temp. SHC-32	30 Days; 200 Hours
6	Wheel Assemblies	(6)	* Mobilux 22 Grease # Mobil Temp. SHC-32	30 Days; 200 Hours
7	Brake Linkage	(5)	10W SAE Motor Oil 2 to 4 Drops	30 Days; 200 Hours

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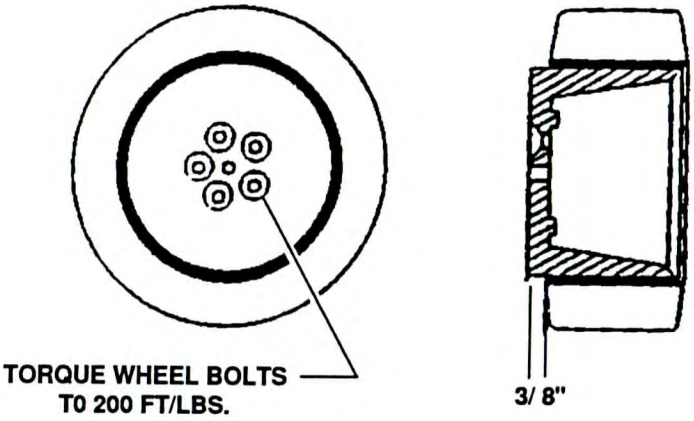
Drive Tire

The truck requires a 10" X 4 X 6 1/2" drive tire. Your truck tire may vary in compound type, such as rubber or poly, and thread design.



CAUTION

Caution must always be exercised when pressing a new tire onto the hub. The dimension from the face of the hub to the edge of the tire is very important in the operation of the truck.

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PM Report Form

A planned maintenance (PM) program of regular, routine inspections and lubrication is important for long life and trouble-free operation of your lift truck. Make and keep records of your inspections. Use these records to help establish the correct PM intervals for your application and to indicate maintenance required to prevent major problems from occurring during operation.

As an aid in performing and documenting your PM inspections, CLARK prepared an ***Electric Truck Planned Maintenance Report Form*** (PM Report Form). Copies of this form may be obtained from your authorized CLARK dealer. We recommend that you use this form as a checklist and a record of your inspection and truck condition.

The maintenance procedures outlined in this manual are intended to be used in conjunction with the PM Report Form. They are arranged in groupings of maintenance work that are done in a logical and efficient sequence.

You make check marks or entries on the PM Report Form when you perform the PM. Please notice on the form a special coding system for indicating the importance of needed repairs and/or adjustments.

When you have finished the PM inspections, be sure to give a copy of the report to the designated authority responsible for lift truck maintenance.

Do not make repairs or adjustments unless authorized to do so.

For safety, it is good practice to:

- Remove all jewelry (watch, rings, bracelets, etc.) before working on the truck.
- Disconnect the battery before working on electrical components.
- Always wear safety glasses. Wear a safety (hard) hat in industrial plants and in special work areas where protection is necessary and required.

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Visual Inspection

Begin the PM routine with a visual inspection of the truck and its components.

1. Walk around the truck and take note of any obvious damage and maintenance problems. Check for loose fasteners and fittings.
2. Check to be sure all capacity, safety, and warning plates or decals are attached and legible.

NOTICE

NAMEPLATES AND DECALS: Do not operate a lift truck with damaged or lost decals and nameplates. Replace them immediately. They contain important information.

3. Inspect the truck for any sign of external leakage: transmission fluid, etc..
4. Check for hydraulic oil leaks and loose fittings.

CAUTION

HYDRAULIC FLUID PRESSURE: Do not use your hands to check for hydraulic leakage. Fluid under pressure can penetrate your skin and cause serious injury.

Then check all of the critical components that handle or carry the load.

WARNING

Lifting devices require special attention to maintain them in safe operating condition.

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Wheels and Tires

Check the condition of the drive and steer wheels and tires. Remove objects that are embedded in the tire. Inspect the tires for excessive wear and breaks or "chunking out" and bond failure between the tire and the rim.

Check all wheel lug bolts to be sure none are loose or missing.

Have missing bolts replaced and loose bolts tightened to the correct torque before operating truck.

Air Cleaning the Truck

Always maintain a lift truck in a clean condition. Do not allow dirt, dust, lint, or other contaminants to accumulate on the truck. Keep the truck free from leaking oil and grease. Wipe up all oil spills. Keep the controls and floorboards clean, dry, and safe. A clean truck makes it easier to see leakage and loose, missing, or damaged parts. A clean condition helps prevent fires and helps the truck run cooler.

The environment in which a lift truck operates determines how often and to what extent cleaning is necessary. For example, trucks operating in manufacturing plants with a high level of dirt, dust, or lint, (e.g., cotton fibers, paper dust, etc.) in the air or on the floor require more frequent cleaning. If air pressure does not remove heavy deposits of grease, oil, etc., it may be necessary to use steam or liquid spray cleaner.

CAUTION

Do not steam clean electrical components

Trucks should be air cleaned at every PM Interval, and more often if needed.

Use an air hose with special adapter or extension having a control valve and nozzle to direct the air properly. Use clean, dry, low-pressure compressed air. Restrict air pressure to 30 psi (207 kPa), maximum (OSHA requirement).

Wear suitable eye protection and protective clothing.

Air clean: upright assembly; drive axle; battery; cables; switches and wiring harness; drive, lift, and steer motors; and steer axle, steer cylinder, and linkage.

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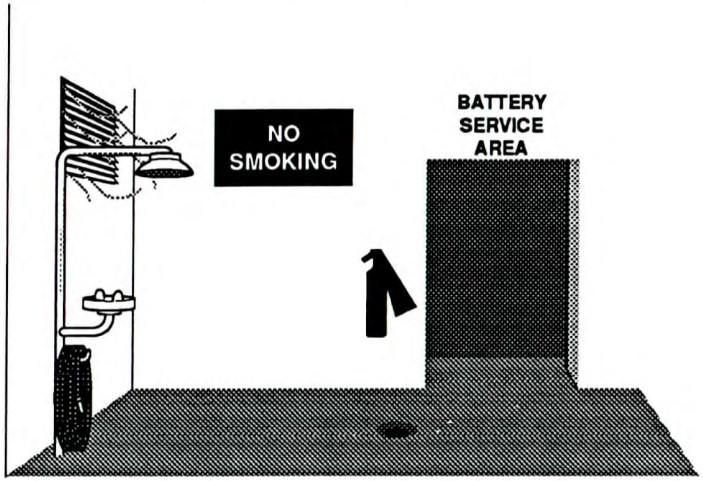
Electric Truck Battery Maintenance



Battery charging installations must be located in areas designated for that purpose. These areas must be kept free of all non-essential combustible materials.

Facilities must be provided for:

- Flushing spilled electrolyte
- Fire protection
- Protecting charging apparatus from damage by trucks
- Adequate ventilation for dispersal of fumes from gassing batteries.

When handling acid concentrates greater than 50 percent acid (above 1.400 specific gravity), an eye wash fountain and deluge shower must be provided.

A conveyor, overhead hoist, or equivalent material handling equipment must be provided for handling batteries.

IMPORTANT

Electric truck batteries are heavy and awkward to handle. They are filled with a very hazardous chemical solution. On charge, they give off hydrogen and oxygen which, in certain concentrations, are explosive. And they are costly. Before you remove, service, or install a truck battery, carefully read the following recommendations and instructions.

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Battery Handling

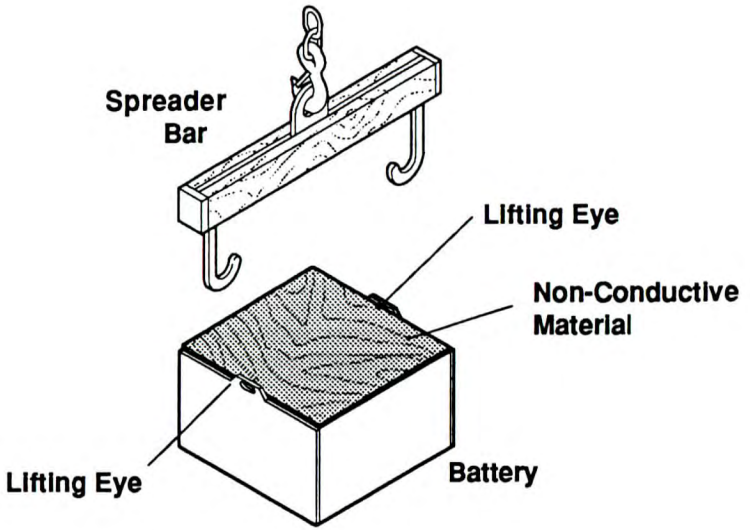
1. Change (remove) or service storage batteries only in an area designated for this purpose.

2. Be sure this area has provisions to flush and neutralize spillage, to ventilate fumes from gassing batteries, and for fire protection.

3. This area should be equipped with material-handling tools designed for removing and replacing batteries, including a conveyor or overhead hoist. Use lift hooks that have safety latches.

4. Always use a special lifting device such as an insulated spreader bar to attach the hoist to the battery. The width of the spreader bar hooks must be the same as the lifting eyes of the battery, to prevent damage to the battery. If the spreader bar hooks are movable, carefully adjust the position (width) of the hooks so that the pull is directly upward (vertical) and no side load or force (pressure) is exerted on the battery case. Be sure the lift hooks are the correct size to fit the lifting eyes of the battery.

5. If the battery does not have a cover of its own or has exposed terminals and connectors, cover the top with a non-conductive material, e.g., (a sheet of plywood or heavy cardboard), prior to attaching the lifting device.



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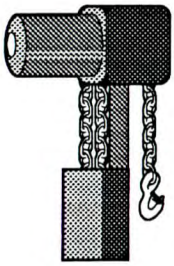


6. Chain hoists or power battery hoists must be equipped with load-chain containers to accumulate the excess lifting chain.

7. Keep all tools and other metallic objects away from the terminals.

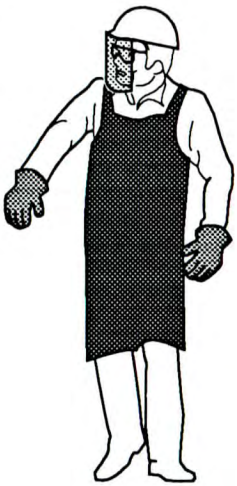
WARNING

BATTERY SERVICE: Battery service must be done by trained and authorized personnel. Battery acid can cause severe burns and injury.

Battery Charging

1. Persons maintaining storage batteries must wear protective clothing such as face shield, long sleeves, and gloves.

2. Hydrogen emissions from charging batteries are flammable. No smoking is allowed in the charging area. Do not check the electrolyte level with an open flame. Do not allow open flame, sparks, or electric arcs in battery charging area.



WARNING

SULFURIC ACID: The battery contains corrosive acid that can cause injury. If acid contacts your eyes or skin, flush immediately with water and get medical assistance.

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WARNING

EXPLOSIVE GASES: Do not smoke or have open flames or sparks in battery charging areas or near batteries. An explosion can cause injury or death.

3. When charging batteries, the vent caps must be kept in place to avoid electrolyte spray. Care must be taken to assure that vent caps are open (clean) and functioning. The battery or compartment covers must be open to dissipate heat and gas.

IMPORTANT

If batteries discharge rapidly during normal operation or do not charge to the correct specifications, contact a qualified battery service technician to check the battery for you. Do not add electrolyte or attempt to service the battery.

Battery Removal from Truck

1. Check the designated service and charging area for fire protection, and be sure all sources of ignition are cleared from the area. **Do not smoke**. Be sure all previous noted equipment is in the area, in good repair, and working properly. If the battery is to be serviced, be sure there are provisions to flush and neutralize spillage and to disperse (ventilate) fumes from gassing batteries on charge. And, be sure there are provisions for handling electrolyte.

2. Before attempting to remove or charge a storage battery, the truck should be positioned in the designated battery service area and the parking brake applied so the truck cannot move.

3. If the battery to be handled is not equipped with its own cover, cover the battery when handling with a non-conductive material, e.g., (plywood or heavy cardboard), before attaching the lifting device.

4. Use an approved lifting device with an insulated spreader bar, to remove and transport a truck battery. Be sure the hoist and lifting chains are equipped with safety hooks.

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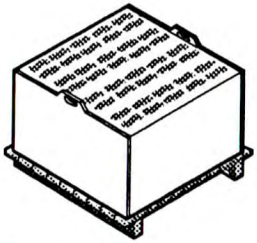
5. Remove the battery and move it to a safe storage location. Store batteries either on an approved battery rack or on a wooden pallet.



Battery Cleaning and Care

Never wash the battery when it is in the truck. The easiest and most satisfactory method of cleaning a battery is to wash it occasionally with a low-pressure cold-water spray. The top can also be washed off with a solution of baking soda and water (add a box of baking soda to a pail of water and stir until dissolved) and rinsed with clean water. It is good practice to have this solution in a battery room at all times.

IMPORTANT

During cleaning, the battery vent caps must be tightly in place.

Refer to the battery manufacturer or supplier for their recommended battery maintenance and care procedures.

BATTERY SAVER and CLEANER, CLARK Part No. 886398, may be used to clean and protect the truck battery.

New Truck Batteries: Apply a light coat of BATTERY SAVER and CLEANER to entire surface of battery. Allow to set for approximately 30 seconds, then wipe thoroughly with a wiping cloth or rag. Chemical action will dissolve rust and corrosion. After cleaning, apply a second coating for protection. This will prevent the start and growth of corrosion on battery terminals and cable connections.

Battery Service Records

Keep a record of battery service and maintenance to obtain the best service life from your battery and truck. Select a pilot cell, take readings of specific gravity and temperature before and after charging, and record the readings with the date. It is best to change the location of the pilot cell occasionally to distribute any electrolyte loss over the battery. Every 2 or 3 months, take complete battery readings (specific gravity, temperature, and voltage) and make a record of them.

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How to Get Maximum Battery Life

1. Follow normal battery maintenance procedures, re-charging before 80% discharged and with periodic equalizing charges.
2. Don't add acid to a battery. Only a person trained and qualified to do battery maintenance should determine if this is necessary.
3. Lift battery only with a correctly-constructed lifting device that will not put pressure on the battery case.
4. Keep open flames, tools, and metal objects away from the top of battery to prevent short circuits and explosions.
5. Do not overcharge.
6. Check the battery electrolyte level **after** each charging. Add water if the top of the separator or plates are visible. **Do not overfill!**
7. **Keep the battery clean and dry**. Wash down as needed.
8. Keep battery service records.

Battery Installation

1. Use only a lead-acid battery with the voltage and ampere-hour rating specified for the truck.
2. When changing batteries on battery electric trucks, replacement batteries must be of the service weight that falls within the minimum/maximum range specified on truck nameplate.
3. Be sure truck is properly positioned and parking brake applied.
4. Handle battery only with approved lifting device.
5. Install the battery correctly in the truck and secure it in position.

NOTICE

Some trucks are equipped with battery stops or blocks. Others do not require them. If the truck being serviced has battery stops or blocks, be sure none are missing or damaged. Replace them as necessary. If they are an adjustable type, be sure they are correctly adjusted and tightened.

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Specifications

Model Designation - Rated Load Capacity
PWC 30 - 6000 lbs (2720 kg)
PWC 40 - 8000 lbs (3620 kg)

Truck Weights - with minimum battery weight:
PWC 30 - 2,710 lbs (1230 kg) *PWT* - 1,750 lbs (794 kg)
PWC 40 - 2,710 lbs (1230 kg)

Battery:
Type = Lead Acid • Minimum Weight - 800 lbs (362 kg)

Transmission:
3 Forward / 2 Reverse

Travel Speeds:
PWC 30 Maximum w/ load 4.4 mph *PWC 40* Maximum w/ load 4.0 mph
PWC 30-40 (See Chart Below)

Tires: - Rubber Poly
PWC 30-40 Front 10.0 x 4.0 *PWT* Front 10.0 x 4.0
Rear 3.25 x 6.0 Rear 7.0 x 4.0

PWT Drive Motor / Gear Ratio Combinations

Drive Motor *Type*	Gear Ratio	Travel Speed Empty *mph*	Travel Speed Loaded *mph*	Towing Capacity *lbs*
Standard	18.8:1	6.3	3.3	10,000
Standard	12.94:1	7.5	5.0	7,000
Hi-Speed	21.15:1	6.3	3.8	12,000
Hi-Speed	12.94:1	8.5	6.5	6,000
Hi-Torque	18.8:1	6.3	3.5	15,000
Hi-Torque	15.34:1	7.0	4.8	15,000

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